## $^{65}$Cu(d,$^{3}$He) 1968Hi06,1969Ma26

History

| Type | Author | Citation | Literature Cutoff Date |
|---|---|---|---|
| Full Evaluation | Balraj Singh and Jun Chen | NDS 178,41 (2021). | 12-Nov-2021 |

Target $J^{\pi}(^{65}Cu$ g.s.)=3/2$^{-}$.

1968Hi06: E=34.2 MeV deuteron beam from the Oak Ridge Isochronous Cyclotron. Target was a 1.2 mg/cm$^2$ 99.6% enriched $^{65}$Cu foil. Reaction products were detected with a ΔE-E Si telescope (FWHM≈150 keV). Deduced levels, L-transfers, spectroscopic factors from DWBA analysis.

1969Ma26: E=51.7 MeV deuteron beam from the Karlsruhe cyclotron. Target was 2 mg/cm$^2$ 99.7% enriched $^{65}$Cu. Reaction products were detected with a Si telescope (FWHM=250-350 keV). Measured $\sigma(\theta_{c.m.}$=10° to 42°). Deduced levels, , DWBA.

Other: 1961Yn01, E=21.6 MeV, $\sigma(\theta)$, g.s. and first 2$^{+}$ level seen.

### $^{64}$Ni Levels

Spectroscopic factor C$^2$S is defined by $d\sigma/d\Omega_{exp}$=N*C$^2$S*$d\sigma/d\Omega_{DWBA}$, where N=2.95 is the normalization factor (1968Hi06,1969Ma26).

| E(level)[†‡] | L[†] | C$^2$S[†] | Comments |
|---|---|---|---|
| 0 | 1 | 0.74 | C$^2$S: other: 0.75 (1969Ma26). |
| 1340 *50* | 1+3 | 0.21,0.44 | C$^2$S: other: 0.15 for L=1 and 0.25 for L=3 (1969Ma26). |
| 2280 *50* | 1 | 0.03 | E(level): not reported by 1969Ma26. |
| 2620 *50* | 1+3 | 0.01,0.15 | C$^2$S: for an unresolved group at 2750, 1969Ma26 give 0.02 (L=1), 0.05 (L=3). |
| 2880 *50* | 1+3 | 0.01,0.03 | |
| 3790 *50* | 3 | 0.46 | L,C$^2$S: for an unresolved group at 3850, 1969Ma26 give L=1+3 with 0.02 (L=1) and 0.40 (L=3). |
| 4290 *50* | 3 | 1.84 | E(level),C$^2$S: other: C$^2$S=1.93 for a group at 4350 *100* (1969Ma26). |
| 5000 *50* | 3 | 1.10 | L,C$^2$S: from 1969Ma26. 1968Hi06 deduce L=1+3 or 2+3, indicating a probable doublet. For L=3, C$^2$S=1.4-1.6 (1968Hi06). |
| 5.50×10$^3$ *10* | 3 | 0.67 | |
| 6.05×10$^3$ *10* | 0 | 0.17 | |
| 6.70×10$^3$ *10* | 0 | 1.0 | |
| 7.30×10$^3$ *10* | 2 | 0.13 | |
| 7.95×10$^3$ *10* | 2 | 0.09 | |

[†] Below 5000, values are from 1968Hi06. Levels above 5000 reported by 1969Ma26 only.

[‡] Estimated uncertainty ≈50 keV below 5 MeV (evaluator), 100 keV above 5 MeV (1969Ma26).